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July 22, 2003

Dale Olson
U.S. Patent and Trademark Office
2231 Crystal Drive
Suite 910
Arlington, VA 22202

VIA FEDERAL EXPRESS

U.S. Patent Application Serial No. 09/399,003
Title: POLYMERASE ENHANCING FACTOR (PEF)
EXTRACTS PEF PRPTEIN AND METHODS
FOR PURIFYING AND IDENTIFYING
Inventors: Holly H. HOGREFE et al.
Filed: September 20, 1999
Our Reference: 4121.0116-02000

Dear Mr. Olson:

Following your request by telephone on July 22, 2003, we enclose a substitute copy of page 46 of U.S. Application No. 09/399,003, which is identical to page 43 of U.S. Application 08/957,709, to which U.S. Application No. 09/399,003 claims benefit of priority.

If you have any questions, please contact us.

With best regards,

Sincerely,

A handwritten signature in black ink, appearing to read 'Clifford E. Ford', written over a horizontal line.

Clifford E. Ford

RWM/CEF/nyf
Enclosure

p45	.....MLDNDKIRKEILIEPFSSEMLQF	1
phage1	.....STRGFKNENITLLEBAA	1
ESOLI	.....MKKIDKGLDPSCKEPPPTAT	1
HAETN	.....MKKIDKGLDSEIGNEPPEPVAT	1
Scerevisiae	.....MTATSDKVNIQLRLASTTPYTS	1
swine	.....MSPTKCKVNNNILEPESH	1
tomato	.....TEPSPKVQKLDHPENCNVPPFRVNS	1
variola	.....MAENQINSPEI	1
ORFN2	.....MFNMNINSPARFVSENRKSHFC	1
Human	.....MEFCHTEIQQVPEQQNTLTPFG	1
Rat	.....MPCSEET--PAISPSKRRAPAEVGGQGRFAF--EHFATATFG	1
ETAV	.....MPVLCALPRPTPTFSAPLAYAVURAKPKLRKQ--RSPDLERADRTSRADPAYSVSKRAAE--DASGRPVSVSEHFAETATFG	1
consensus	.....ICGNCQADAEAAAKKEEIMAYQVQ	1
	.....m i kls a lpttras	1

25	AGTDRV	RVBXXRV	GREAXV	KGLDVEK	GVKXV	YR	YAL	LE	LER	K	DDV	Q	TKI	...	S	REGV	...	ES	PAW	PG	DI	...	ST	Y	Y	AS	NE																												
23	ATG	TSIS	...	...	ETV	Q	IK	SL	GA	Q	G	DEV	LV	YD	...	S	N	P	Q	Q	AD	IN	SV	...	S	Y	Y	AS																									
21	ATG	TSIS	...	...	DAVE	A	Q	TT	P	A	A	AD	PS	LA	AM	...	F	S	G	Q	IC	VE	N	LV	...	S	Y	Y	AS																								
20	ATG	TSIS	...	...	DAVE	A	Q	TT	P	A	A	AD	PS	LA	AM	...	F	S	G	Q	IC	VE	N	LV	...	S	Y	Y	AS																								
28	ATG	TSIS	...	...	ESF	Q	ET	RE	I	P	C	S	Y	AD	PN	LA	...	F	S	G	Q	IC	VE	N	LV	...	S	Y	Y	AS																							
28	ATG	TSIS	...	...	ESF	Q	ET	RE	I	P	C	S	Y	AD	PN	LA	...	F	S	G	Q	IC	VE	N	LV	...	S	Y	Y	AS																							
28	ATG	TSIS	...	...	ESF	Q	ET	RE	I	P	C	S	Y	AD	PN	LA	...	F	S	G	Q	IC	VE	N	LV	...	S	Y	Y	AS																							
29	ATG	TSIS	...	...	...	I	F	IN	CO	Q	S	ST	F	T	N	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS																						
29	ATG	TSIS	...	...	...	I	F	IN	CO	Q	S	ST	F	T	N	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS																						
25	ATG	TSIS	...	...	...	S	Y	Y	K	N	R	I	A	R	N	...	C	W	H	D	K	T	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
52	ATG	TSIS	...	...	...	...	T	R	A	R	G	K	A	R	T	...	S	A	V	Q	T	A	P	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS													
30	ATG	TSIS	Y	E	T	R	A	R	G	K	A	R	T	...	S	A	V	Q	T	A	P	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
29	ATG	TSIS	C	V	I	S	H	C	S	R	...	F	I	L	K	P	S	...	S	L	G	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
29	ATG	TSIS	Y	E	T	R	A	R	G	K	A	R	T	...	S	A	V	Q	T	A	P	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
46	ATG	TSIS	Y	E	T	R	A	R	G	K	A	R	T	...	S	A	V	Q	T	A	P	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
85	ATG	TSIS	I	M	E	S	T	K	I	P	...	K	C	...	V	P	N	S	...	K	G	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
34	ATG	TSIS	I	M	E	S	T	K	I	P	...	K	C	...	V	P	N	S	...	K	G	...	I	S	...	P	S	LA	VE	N	LV	...	S	Y	Y	AS															
101	AGYDI	say	t	i	p	p	e	l	v	t	d	i	l	p	...	y	g	r	m	a	-	p	r	s	i	a	v	a	r	k	i	d	l	g	g	g	i	d	y	i	g	n	l	g	w	i	n	y	n	g	e

120 VEVRYEYEFVYIASIET
101 VTISKQEPYGRVYVTTNDGANGRTTISSEV
108 TTLOPEPIANRYPVPAQAFNLIEDPIADSEIR
108 KEIEVDRIACAFVPAQAFNIEDFOQIESIR
104 PAIKGDRVAQLLESDDACFVDSIEGAEALGFSSTN
100 ENIVGVDRIACIFSEVYIIEEKCIEDENSHGISM
127 ENIEVDRIACILVQKSTLEIEQDDSSVSGSIFGSTV
104 ENNTVDRIACILVQFYVEIEKEQSSEDSDFGSTL
104 ENAKGDRIAQLICEISCAFOENCMNIDDSIFGSK
121 ENVAKGDRIAQLICEALFYVEIEEQADDESSISFGSK
160 ENVAKGDRIAQLICEILYVEIEEQQTANPESSISFGSK
108 IKPIFSQAFQILIQ-HHSNSRQPMDENKISGQDSEFGSTVFWENIQEAQDEHNHSTSPKILARNYKIPUTVAKQITOECPHCTKQGSPPAGVM
201 f l k Gdliaqlif ril pe i v ld tdr g gfigatg